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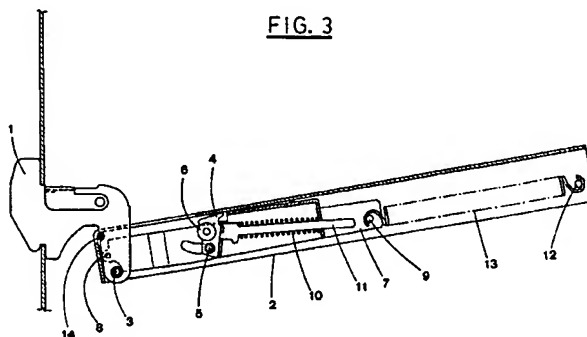
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54 Improvements to hinges for horizontally hinged doors, especially for cookers or dishwashers.

57 Improvements to hinges for horizontally hinged doors, rotating about pin (3), especially for cookers or dishwashers, consisting of a first cam-shaped element (1); a second elongated element (2) pivoted on (3) at an angled end of the said first element (1); a third, swivelling and rocking bridge element (4), horizontally mounted on the second element (2) and itself mounting a cam following roller (6) that operates on the cam-shaped part of the first element; a fourth, H-shaped element (7) with lower prongs pivoted on (8) at the angled end of the said first element (1) eccentrically with respect to the pivot pin (3) connecting the said first element (1) to the said

second element (2), the said fourth element being mounted on the second element (2) in such a manner that it can slide longitudinally; a spring device (10) mounted on a rod (11) attached to the third, bridge element (4), designed to operate on the rotation of the said third element (4) and longitudinally on the fourth element (7); a spring device (10) that may be removed after the hinge has been assembled and that is fitted between the fourth element (7) and the second element (2); a crosspiece (14) used to stop against the first element (1) when the door is in the open position.

FIG. 3



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The object of the present invention is to provide improvements to hinges for horizontally hinged doors, especially for cookers or dishwashers.

Hinges for horizontally hinged doors, especially for cookers or dishwashers, typically consist of a first element attached to the structure of a cooker or other appliance and joined to a second element attached to the door of the appliance and having a spring device designed to make it easier for a user to open and close the door.

Italian patent application No.3509 A/90 dated 17 May 1990 discloses a hinge for horizontally hinged doors, especially for cookers or dishwashers, consisting of a first elongated, cam-shaped, supporting element removably attached to the body of a domestic appliance; a second elongated supporting element pivoted at one end to an angled end of the said first supporting element and removably attached to the door of the appliance; a third, swivelling and rocking bridge element, horizontally mounted on the second element and itself mounting a cam following roller that operates on the cam-shaped part of the first supporting element; a fourth element shaped like an upturned "U" with elongated prongs pivoted eccentrically at the angled end of the first element to the connection between the first supporting element and the second supporting element, the said fourth element being mounted on the second element in such a manner that it can slide longitudinally; a spring mounted on a rod attached to the third, bridge element, designed to operate on the rotation of the said third element and longitudinally on the fourth element.

In addition, the hinge as described above supports the appliance door in the open position with three different stops, namely, the stop formed by the fourth element with the rotation pin between the first and second elements, the stop formed by the slots in the fourth element and operating in conjunction with the rotation pin of the third element and the stop formed by the direct contact of the second element with the first.

The said hinges are sold ready assembled and, consequently, present the disadvantage, when being fitted to the appliance, of making it impossible to adjust the balancing forces in accordance with the type of door to be fitted. Another disadvantage is that when the door is fully open, the stop formed by direct contact of the second element against the first element deforms the edge of the second element, thus placing a greater load on the other two stops and making the appliance door less safe.

The object of the present invention is to overcome the aforementioned disadvantages by providing improvements to hinges for horizontally hinged doors, especially for cookers or dishwashers, con-

sisting of a first elongated, cam-shaped, supporting element removably attached to the body of a domestic appliance; a second elongated supporting element pivoted at one end to an angled end of the said first supporting element and removably attached to the door of the appliance; a third, swivelling and rocking bridge element horizontally mounted on the second element and itself mounting a cam following roller designed to operate on the cam-shaped part of the first supporting element; a fourth element pivoted eccentrically at the angled end of the first element to the connection between the first supporting element and the second supporting element, the said fourth element being mounted on the second element in such a manner that it can slide longitudinally; a spring mounted on a rod attached to the third, bridge element, designed to operate on the rotation of the said third element and longitudinally on the fourth element; open door support consisting of the stop formed by the fourth element with the rotation pin between the first and second elements, the stop formed by the slots in the fourth element and operating in conjunction with the rotation pin of the third element and the stop formed by the direct contact of the second element with the first, the said improvements being characterized in that the fourth element is H-shaped and is fitted with an additional spring that may be removed after assembling the hinge and that is designed to operate between the fourth and second elements; and in that there is an additional crosspiece fixed to the bottom end of the side walls of the second supporting element designed to stop against the first supporting element when the appliance door is in the open position.

The improvements to the hinge as disclosed herein are evidenced below with the aid of the drawings which represent a preferred, although not sole, embodiment of the disclosure.

Figure 1 is a perspective view of the improved hinge.

Figure 2 is a symmetrical cross-section view of the hinge represented in Figure 1 in the closed position.

Figure 3 is a symmetrical cross-section view of the hinge represented in Figure 2 in the open position.

With reference to Figures 1, 2 and 3, the hinge as disclosed herein consists of a first elongated, cam-shaped, supporting element 1 removably attached to the body of a domestic appliance; a second elongated supporting element 2 pivoted at one end on pin 3 to an angled end of the said first supporting element 1 and removably attached to the door of the appliance; a third, horizontally mounted bridge element 4 that swivels and rocks on a pin 5 on the second element and that itself mounts a cam following roller 6 designed to op-

erate on the cam-shaped part of the first supporting element 1; a fourth, H-shaped element with elongated prongs, the lower prongs 8 being pivoted eccentrically at the angled end of the first element on the pivot pin 3 connecting the first supporting element 1 to the second supporting element 2, and the upper prongs have a crosspiece 9 whose purpose is described below.

The said fourth element 7 is mounted on the second element 2 in such a manner that it can slide longitudinally under the action of a spring 10 mounted on a rod attached to the third, bridge element 4, and designed also to operate on the rotation of the said third bridge, element 4 under the known closing action provided by cam following roller 6 operating on the cam profile of the first supporting element 1.

At the top of the second supporting element 2 there is a crosspiece 12 to which a spring 13 is hooked, the other end of the spring being hooked to crosspiece 9 attached to the said fourth element 7. The said spring 13, unlike spring 10, is replaceable even if the hinge has already been assembled, thus making it possible to vary the elastic force of the hinge at the time of its assembly on an appliance and according to the type of door being fitted to the appliance itself.

The bottom of the said second supporting element 2 mounts a crosspiece 14, which, when the appliance door is in the open position, comes into contact with the first element 1 in such a way that the force acts on the sides of the second supporting element.

The improvements described herein make it possible to overcome the above mentioned disadvantages by providing a preassembled hinge whose elastic force may be varied at the time it is fitted to a domestic appliance so as to avoid bending at the point where the first and second elements come into contact when the appliance door is fully open.

While the invention has been described in connection with a specific embodiment thereof, changes and modifications may be made therein without departing from the scope of the appended claims. Furthermore, all the details can be replaced by technically equivalent parts.

Claims

1. Improvements to hinges for horizontally hinged doors, especially for cookers or dishwashers, consists of a first elongated, cam-shaped, supporting element (1) removably attached to the body of a domestic appliance; a second elongated supporting element (2) pivoted at one end on pin (3) to an angled end of the said first supporting element (1) and removably attached

to the door of the appliance; a third, horizontally mounted bridge element (4) that swivels and rocks on a pin (5) on the second element and that itself mounts a cam following roller (6) designed to operate on the cam-shaped part of the first supporting element (1); a fourth element pivoted at the angled end of the first element eccentrically with respect to the connection between the said first supporting element and the said second supporting element, the said fourth element being mounted on the second element in such a manner that it can slide longitudinally; a spring attached to the third bridge element (4) is designed to operate on the rotation of the said third element and longitudinally on the fourth element (7), the said improvements being **characterized in that** the fourth element (7) is substantially H-shaped and is fitted with an additional spring (13) that may be removed after assembling the hinge and that is designed to operate between the fourth and second elements.

2. Improvements to hinges according to claim (1), **characterized in that** there is provided an additional crosspiece (14) fixed to the bottom end of the side walls of the second supporting element (2) designed to stop against the first supporting element (1) when the appliance door is in the open position.
3. Improvements to hinges as in the foregoing claims and as described and illustrated herein with reference to the accompanying drawings and for the objects stated herein.

FIG. 1

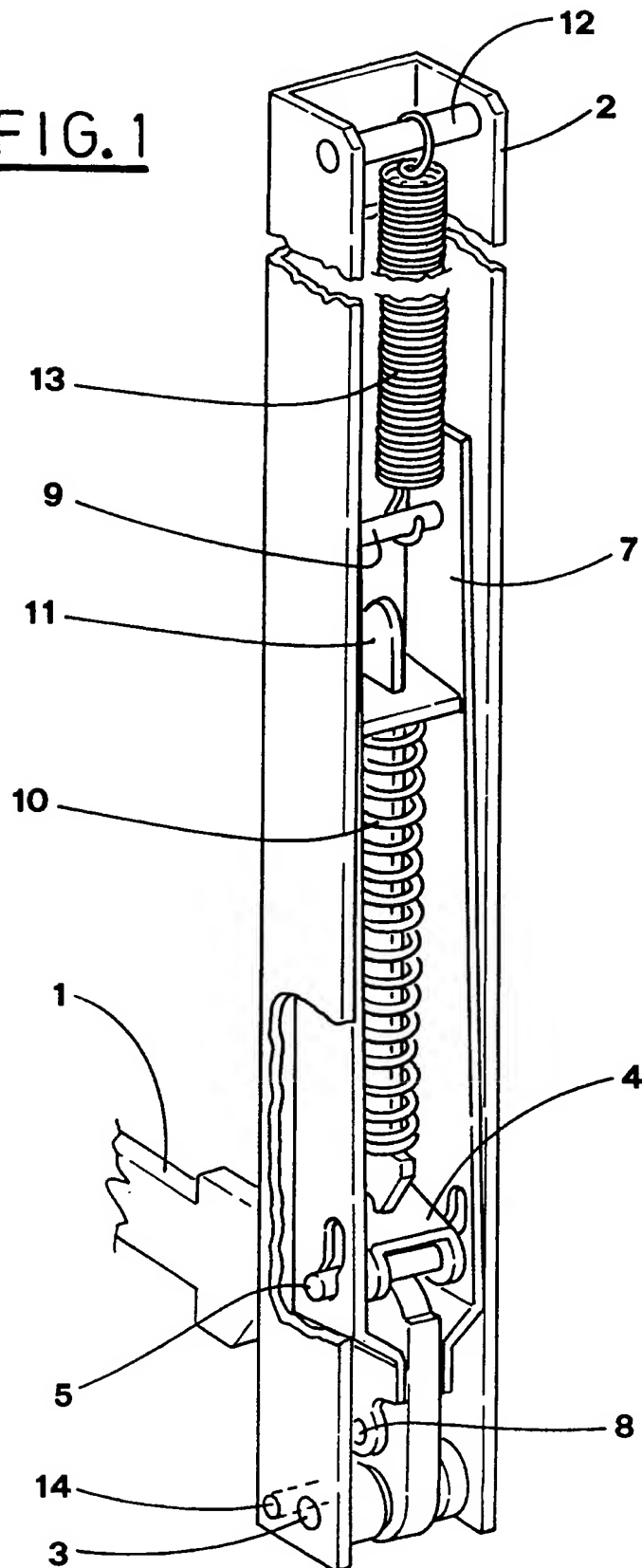
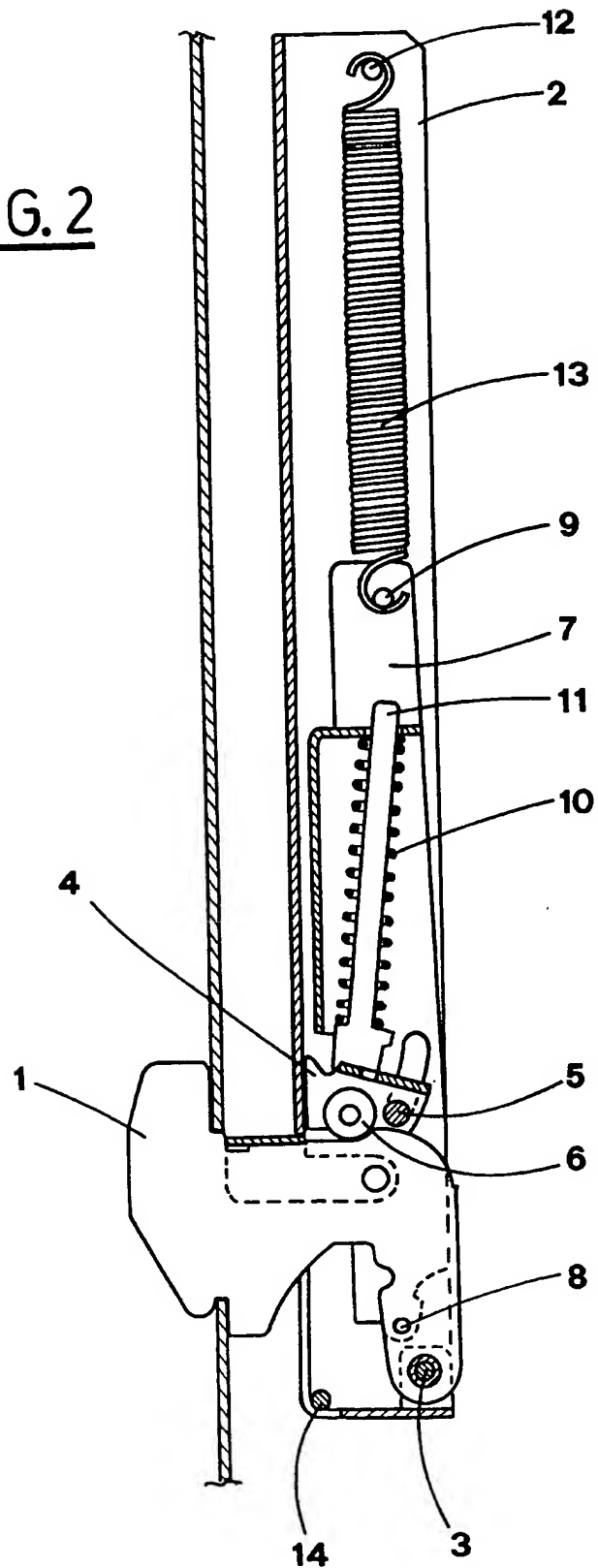


FIG. 2



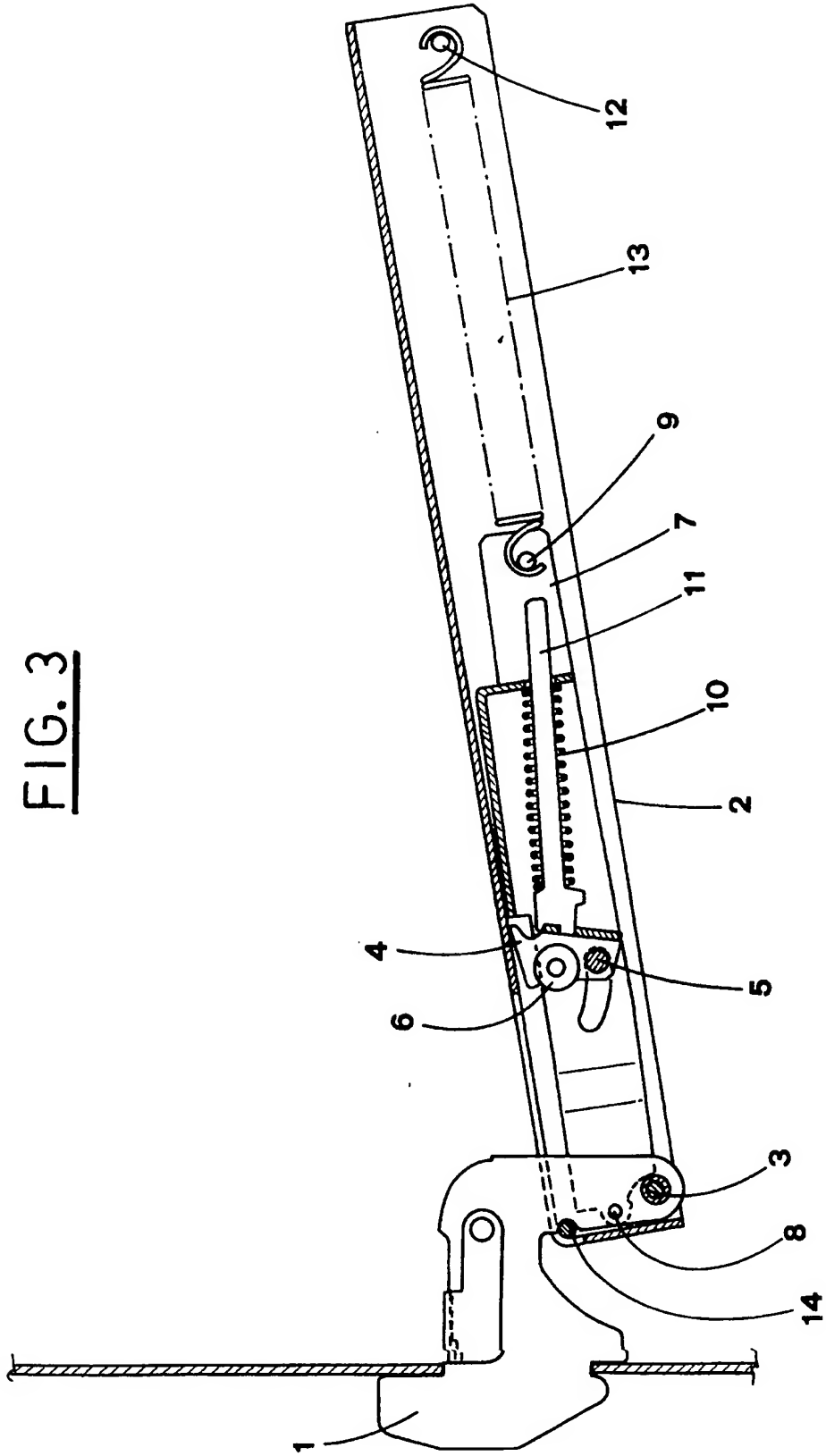


FIG. 3



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EUROPEAN SEARCH REPORT

Application Number
EP 93 83 0370

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
A	FR-A-2 662 204 (CERNIERE MECCANICE INDUSTRIALI-S.R.L.) * the whole document * * figure 6 * ---	1	F24C15/02 E05F1/12 E05D11/10
A	US-A-5 025 776 (HANLEY ET AL) * abstract * ---	1	
A	DE-B-10 39 208 (HOMANN-WERKE WILHELM HOMANN) * column 4, line 26 - line 36; figure 1 * -----	2	
			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
			F24C E05F E05D A47L
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 20 December 1993	Examiner Van Kessel, J
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background P : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document	